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TIME

Of mice and men: Don't blame the rodents

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Most drugs that work in laboratory animals, such as mice, do not work in humans, but the rodents are not to blame. These animals are specifically bred to spend their lives as test subjects and they do save lives.

Full Text (497 words)

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WHEN DR. JUDAH FOLKMAN IS ASKED WHETHER HE CAN CURE CANCER, he invariably replies, "Yes, in mice." That's not entirely self-effacing whimsy. Like every good researcher-and every responsible science journalist-he knows all too well that most drugs that work in lab animals turn out to be duds in humans. The field is littered with "magic bullets" that failed, among them monoclonal antibodies, tumor necrosis factor, interferon and interleukin-2. While all were initially hyped as potential cure-alls, they have turned out to have only modest usefulness in the war on cancer. At best, says Dr. Allen Oliff, Merck & Co.'s chief of cancer research, no more than 10% or 20% of agents tried in mice succeed. (On the other hand, the treatments that are good for people are almost always good for mice.)

But don't blame that on the rodents. They are bred to spend their brief lives (about two years) as test subjects-a job they do pretty well. "As mammals with physical systems somewhat like our own, they give us a relatively quick, inexpensive way of getting at the causes of disease and possible therapies," says Dr. Kenneth Paigen, director of the Jackson Laboratory in Bar Harbor, Maine, the world's most famous mouse-breeding facility. Each year the lab ships out some 2 million mice from more than 1,700 stocks, including so-called designer mice with genes added or deleted so that they more closely "model" human disease. Among its customers is Folkman, whose lab relies on Jackson's best-selling C57BL/6J, or "Black 6" (cost: \$8.15 to \$10.85 apiece, depending on age).

Trouble is, Black 6 and kin often do their jobs too well. "Mice distort or exaggerate what you see in humans," says tumor biologist Robert Kerbel of Toronto's Sunnybrook Health Science Centre. Mouse tumors, which are usually planted just under the skin, grow much more rapidly than deep-seated human tumors. Also, as Nobel laureate J. Michael Bishop observes, too much breeding isn't always a good thing. In his labs at the University of California, San Francisco, he is genetically altering mice to provide better models for studying leukemia and neuroblastoma, the most common tumor in children under 3. But genetic alterations can go only so far. "How similar the mouse is to man," he concedes, "is still a legitimate issue."

Similar or not, no one, except perhaps a few animal-rights activists, is about to chase mice out of the lab. Mice save lives. Because their tumors develop almost overnight, says Merck's Oliff, "we can do tests 10 or 100 times more quickly than in humans." Their usefulness varies with diseases, though. He notes that rodents are better predictors of human reaction to cardiovascular or anti-inflammatory agents than to cancer or diseases of the central nervous system. But that's a trade-off researchers are more than willing to accept in their search for a cancer cure. "If you find a favorite agent doesn't work," Oliff says, "you simply throw it away and go on to something else." --By Frederic CoWen

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